Chapter 10: Properties and Disorders of the Skin

TOPICS

1. Introduction
2. Histology of the Skin
   A. Characteristics
   B. Epidermis
   C. Dermis
   D. Subcutaneous Tissue
   E. Nourishment
   F. Nerves
   G. Elasticity
   H. Skin Color
   I. Glands
   J. Absorption
   K. Functions
3. Disorders of the Skin
   A. Introduction
   B. Lesions
   C. Pigmentations
   D. Inflammations
   E. Sebaceous (Oil) Glands
   F. Sudoriferous (Sweat) Glands
4. Skin Cancer
   A. Introduction
   B. Types
   C. Detection
5. Maintaining Healthy Skin
   A. Diet
   B. Water

NOTES TO THE INSTRUCTOR

Chapter 10, Properties and Disorders of the Skin, provides foundational information that barbering students need to know in order to perform facial and shaving services at an optimum level. Only with a clear understanding of the structure of the skin will students be able to correctly analyze and make determinations about their clients’ skin and the appropriate treatment or service options that can be recommended. The information in this chapter also lends itself to the creation of innovative activities that students may engage in for the purpose of learning the material for a lifetime and not just to pass the chapter test or state board exams.

STUDENT PREPARATION: Read Chapter 10: Properties and Disorders of the Skin

STUDENT MATERIALS

- Milady’s Standard Professional Barbering textbook
- Milady’s Standard Professional Barbering Student Workbook
- Milady’s Standard Professional Barbering Student CD-ROM

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• Writing materials
• Materials and supplies for 3-D model of the skin project (optional)

LEARNING OBJECTIVES
Upon completion of this lesson, students should be able to:
1. Describe the structure and divisions of the skin.
2. List the functions of the skin.
3. Identify recognizable skin disorders.

ALLOTTED TIME: Four to six hours, depending on depth of study and range of activities.

TEACHING AIDS
• Milady's Standard Professional Barbering textbook
• Milady's Standard Professional Barbering Instructor Slides
• Whiteboard or chalkboard; dry-erase markers or chalk
• CD/DVD player or overhead projector

EDUCATOR REFERENCES
• Milady's Standard Professional Barbering textbook
• Milady's Standard Professional Barbering Course Management Guide

LESSON OUTLINE
1. Introduction
   A. Dermatology: the scientific study of the skin, its nature, structure, functions, diseases, and treatment
   B. Importance to Barbers: forms the basis for effective skin and scalp treatment programs

2. Histology of the Skin
   A. Characteristics of the Skin
      1. Largest and one of the most important organs of the body
      2. Healthy skin: slightly moist; soft; elastic; flexible; smooth, fine-grained texture; slightly acidic;
         free of blemishes and disorders
      3. Varies in thickness: thinnest on the eyelids and thickest on the palms and soles
      4. Appendages of the skin: hair, nails, sweat glands, and oil glands
      5. Skin divisions: epidermis, dermis, and subcutaneous tissue; see textbook Figure 10-1 or
         Supplements 10.0 and 10.1.
   B. Epidermis
      Activity 1: Liven up the lecture! Use a variety of dry-erase colors on the whiteboard to draw a
      simple line illustration of each skin layer as the material is presented.
      1. Outermost protective layer of the skin; also known as cuticle or scarf skin
      2. Contains many small nerve endings
      3. Layers of the epidermis
         a. Stratum corneum: also known as horny layer
            1. Outer layer of the epidermis
            2. Tightly packed, scale-like cells; continually shed and replaced by cells from underlying layers
            3. Cells made up of the chemical protein keratin
            4. Keratin combines with oil and helps make the stratum corneum a protective,
               waterproof layer.
b. Stratum lucidum: lies beneath the stratum corneum
   1. Also known as clear layer
   2. Consists of small, transparent cells through which light can pass

c. Stratum granulosum: lies beneath the stratum lucidum
   1. Also known as granular layer
   2. Consists of cells that look like granules
   3. Cells are almost dead and are pushed to surface to replace cells shed from the stratum corneum.

d. Stratum spinosum: a sub-layer above the basal strata and beneath the granulosum; often classified as part of the stratum germinativum. It is in the spiny layer that the process that causes skin cells to shed begins.

e. Stratum germinativum: reproductive layer.
   1. Also known as Malpighian, or basal, layer
   2. Deepest layer of the epidermis
   3. Responsible for the growth of the epidermis
   4. Contains a dark pigment called melanin that protects cells from ultraviolet rays

C. Dermis
   1. Inner layer of the skin; also known as the derma, corium, cutis, or true skin
   2. About 25 times thicker than the epidermis
   3. Consists of connective tissue
   4. Layers of the dermis
      a. Papillary: lies directly beneath the epidermis
         1. Contains elastic tissue called papillae, looped capillaries, and small blood vessels
         2. Contains tactile corpuscles with nerve-fiber endings and melanin
      b. Reticular layer: deeper layer of the dermis; supplies skin with oxygen and nutrients.
         1. Contains fat cells, blood vessels, hair follicles, lymph glands, and arrector pili muscles
         2. Contains sweat glands and oil glands

D. Subcutaneous Tissue
   1. Layer of fatty tissue found below the dermis; also known as adipose tissue
   2. Some specialists consider it a continuation of the dermis.
   3. Varies in thickness according to age, sex, and general health
   4. Contains fats for use as energy
   5. Adds smoothness and contour to the body; acts as a protective cushion for the outer skin

E. How Skin Is Nourished
   1. Blood and lymph supply essential materials for growth, nourishment, and repair of the skin, hair, and nails.
   2. One-half to two-thirds of the body's blood supply is distributed to the skin.

F. Nerves of the Skin
   1. Motor nerve fibers: distributed to the arrector pili muscles attached to hair follicles; cause “goose bumps” when a person is frightened or cold.
   2. Sensory nerve fibers: react to heat, cold, touch, pressure, and pain; send messages to the brain; refer to textbook Figure 10-3.
   3. Secretory nerve fibers: distributed to sweat and oil glands of the skin; regulate excretion of perspiration and the flow of sebum.
   4. Sense of touch
      a. Nerve endings in the papillary layer; most abundant in the fingertips
      b. Register basic sensations: touch, pain, heat, cold, pressure, or deep touch
G. Skin Elasticity
   a. Skin strength, form, and flexibility: collagen and elastin protein fibers
   b. Collagen: gives structural support to structures found in the dermis
   c. Elastin: gives skin its elasticity, flexibility, and ability to regain its shape after stretching
   d. Characteristics of aging skin: loss of elasticity, wrinkles, and sagging

H. Skin Color
   1. Depends on blood supply and melanin
   2. Melanin: primary source of skin color
   3. Color of pigment: a hereditary trait that varies among races and nationalities

I. Glands of the Skin
   1. Skin contains two types of duct glands: sudoriferous and sebaceous glands; refer to textbook Figure 10-4.
   2. Duct glands extract material from blood to form new substances.
   3. Sudoriferous or sweat glands
      a. Consist of a coiled base (fundus) and tube-like duct that terminates at the skin surface; form sweat pores
      b. Present on almost all body parts; more numerous on the palms, soles, forehead, and armpits
      c. Regulate body temperature
      d. Help to eliminate waste products
      e. Under control of the nervous system
      f. Sweat gland activity increased by heat, exercise, emotion, and certain drugs
   4. Sebaceous glands or oil glands
      a. Connected to the hair follicle
      b. Consist of sacs with ducts that open into the hair follicle, where they secrete sebum
      c. Sebum lubricates the skin and preserves the softness of the hair.
         1. Sebum: a semi-fluid oily substance produced by oil glands
         2. Primary function: acts as a shield to prevent moisture from evaporating from the skin surface
         3. Blackhead: formed when the sebum becomes hardened and duct becomes blocked
      d. Found on all body parts except palms and soles; numerous on the face

J. Absorption Level of the Skin
   1. Hair follicles and pores of sudoriferous glands allow entry of drugs and chemicals into the body.
   2. Antiseptic creams and ointments may be absorbed to combat skin infections.
   3. Vitamin and hormone creams may be used to overcome dry or damaged skin.

K. Functions of the Skin
   1. Protection: protects the body from injury and bacterial invasion
      a. Sebum renders skin waterproof.
      b. Resistant to temperature, minor injuries, chemical substances, and many forms of bacteria
   2. Sensation: responds to heat, cold, touch, pressure, and pain
      a. Sensory nerve endings send messages to the brain and stimulate response.
      b. Sensory endings responsive to touch and pressure lie close to hair follicles.
   3. Heat regulation: protects the body from the environment
      a. Healthy body temperature: about 98.6 degrees Fahrenheit
      b. Blood and sweat glands adjust to cool the body through the evaporation of sweat.
   4. Excretion: perspiration is excreted from the skin via sudoriferous glands.
   5. Secretion: sebum is secreted by the sebaceous glands and lubricates the skin and hair.
   6. Absorption: limited, but does occur with some female hormone creams and certain fatty materials
3. Disorders of the Skin

A. Introduction
1. Barbers may perform preventative or maintenance facial treatments.
2. Need to recognize hypertrophies (moles, warts, etc.)
3. Need to recognize skin conditions that may be aggravated by facial or shaving procedures
4. Important to differentiate between noncontagious and contagious skin conditions
5. Symptoms: signs or indications of disease
   a. subjective: symptoms that can be felt by the individual; examples: itching, burning, or pain
   b. objective: symptoms that can be observed by anyone; examples: pimples, pustules, or boils
6. Some skin and scalp disorders may be treated in cooperation with a physician or dermatologist.
7. Barbers should not perform services on persons with infectious disorders or inflamed skin.

B. Lesions of the Skin
1. Lesion: structural change in the tissues caused by injury or disease
2. Three types: primary, secondary, and tertiary
3. Barbers are concerned with primary and secondary lesions only.
4. Primary lesions
   a. Characteristics (see textbook Figures 10-5 to 10-8.)
      1. Flat, non-palpable changes in skin color
      2. Elevations formed by fluid in a cavity
      3. Elevated, palpable solid masses
   b. Examples of primary lesions
      1. Bulla: large blister containing watery fluid
      2. Cyst: closed, abnormally developed sac containing fluid or morbid matter, above or below the skin
      3. Macule: small, discolored spot or patch on the skin surface; neither raised nor sunken
      4. Papule: small, elevated pimple; contains no fluid, but may develop pus
      5. Pustule: inflamed pimple containing pus
      6. Tubercle: abnormal, rounded solid lump projecting above, within, or under the skin
      7. Tumor: abnormal cell mass varying in size, shape, and color; excessive cell multiplication
      8. Vesicle: small blister with clear fluid, lying within or beneath the epidermis; example: poison ivy
      9. Wheal: itchy, swollen lesion that lasts only a few hours; examples: hives and insect bites
5. Secondary lesions
   a. Characteristics (See textbook Figures 10-9 and 10-10.)
      1. A collection of material on the skin
      2. A loss of skin surface
   b. Examples of secondary lesions
      1. Crust or scab: accumulation of dead cells that form over a wound or blemish while healing
      2. Excoriations: skin sore produced by scratching or scraping
      3. Fissure: crack in the skin that penetrates into the dermis; examples: chapped hands or lips
      4. Keloid: thick scar resulting from excessive growth of fibrous tissue
      5. Scale: any accumulation of dry or greasy flakes; example: abnormal or excessive dandruff
      6. Scar or cicatrix: light-colored, slightly raised mark formed after an injury or lesion has healed
6. Hypertrophies of the skin
   a. Characteristics
      1. Any abnormal growth of skin tissue
      2. Usually benign or harmless

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b. Examples of hypertrophies of the skin
   1. Keratoma: acquired, superficial, thickened patch of skin; commonly known as a callus; caused by continued pressure or friction
   2. Mole: small, brownish spot or blemish ranging in color from pale tan to bluish black. Some are small and flat; others more deeply seated or darker in color. Large, dark hairs often grow in moles; Caution: Do not treat or remove hair from moles. Moles that grow in size, get darker, or become sore or scaly need medical attention.
   3. Verruca: technical term for wart. Hypertrophy of the papillae and epidermis caused by a virus. Infectious to the person who has one; can spread from one location to another.

C. Pigmentations of the Skin
   1. Pigment: may be affected by internal factors of the body or external environmental conditions; abnormal colors seen in every skin disease and many systemic disorders.
   2. Certain substances and drugs can create pigmentation changes.
   3. Pigmentation conditions and disorders
      a. Chloasma: also known as liver spots; caused by increased pigment deposits in the skin
      b. Lentigines: technical term for freckles; small yellow-to-brown-colored spots on skin
      c. Leukoderma: abnormal white patches; caused by burns or congenital pigmentation defects; classified as albinism and vitiligo (See textbook Figures 10-11 and 10-12.)
         1. Albinism: congenital leukoderma or absence of melanin pigments in the body, including the skin, hair, and eyes; may be partial or complete. The hair is silky and white or pale yellow; skin is pinkish-white and will not tan.
         2. Vitiligo: acquired condition of leukoderma affecting the hair or skin in patches
      d. Nevus: also known as birthmark; small or large abnormal pigmentation
      e. Stain: abnormal brown- or wine-colored discoloration of unknown cause; circular, irregular shape; occurs during aging or after the disappearance of certain diseases, moles, freckles, and liver spots (See textbook Figure 10-13.)
      f. Tan: a change in skin pigmentation due to exposure to the sun or ultraviolet rays

D. Inflammations of the Skin
   1. Dermatitis: general term for an inflammatory condition of the skin.
   2. Eczema: inflammatory skin disease; may be acute or chronic; present as dry or moist lesions
      a. Frequently accompanied by itching or burning
      b. Should be referred to a physician for treatment
      c. Cause is unknown (Refer to textbook Figure 10-14.).
   3. Herpes simplex: recurring viral infection
      a. Produces fever blisters and cold sores: single or grouped vesicles with red, swollen bases
      b. Blister usually appear on the lips, nostrils, or other part of the face.
      c. Rarely lasts more than a week, but is contagious; see textbook Figure 10-15.
   4. Psoriasis: chronic, inflammatory skin disease
      a. Characterized by dry, red patches covered with coarse, silvery scales
      b. Usually occurs on the scalp, elbows, knees, chest, lower back; rarely on the face
      c. Not contagious and cause is unknown (refer to textbook Figure 10-16.)
   5. Anthrax: inflammatory skin disease
      a. Presence of small, red papule, followed by formation of a pustule, vesicle, and hard swelling
      b. Accompanied by itching and burning at point of infection
      c. Contagious; may be spread through the use of infected shaving and neck brushes
   6. Ivy dermatitis: inflammation caused by exposure to poison ivy, poison oak, or poison sumac
      a. Blisters and itching develop soon after contact occurs.
      b. Condition can spread by contact with contaminated hands, clothing, objects, etc.
      c. Serious cases should be referred to a physician.
7. Dermatitis venenata: eruptive skin infection resulting from occasional or frequent contact with chemicals or tints

E. Disorders of the Sebaceous (Oil) Glands

1. Acne: chronic inflammation of the sebaceous glands from retained secretions
   a. Occurs most frequently on the face, back, and chest
   b. Cause held to be microbic in nature; adolescence and digestive disturbances can trigger inflammations.
   c. Two basic types of acne (refer to textbook Figure 10-17.)
      1. Acne simplex: also known as common pimples
      2. Acne vulgaris: more serious and deep-seated skin condition
   d. Advisable to seek diagnosis and treatment by a physician before giving facial services in the barbershop
2. Asteatosis: dry, scaly skin; absolute or partial deficiency of sebum; possible causes: old age, exposure to cold or alkalis, or bodily disorders
3. Comedone: mass of hardened sebum and dead cells in a hair follicle (refer to textbook Figure 10-18.)
   a. Open comedones (blackheads) occur when excess oil in the follicles are exposed to oxygen and oxidize to a dark color.
   b. Closed comedones (whiteheads) do not have a follicular opening to be exposed to oxygen, so the sebum remains a whitish color and produces a whitehead.
   c. Appear most frequently on the face, forehead, and nose
   d. Remove by using proper extraction procedures
4. Milia: also known as milk spots; small, benign, whitish bumps that occur when dead skin is trapped in the surface of the skin
   a. Commonly seen in infants; usually disappear after a few weeks
   b. Adult milia may develop from inflammation or injury; more common to dry skin types. Can occur on any part of the face, neck, chest, or shoulders; no lasting negative effect. See textbook Figure 10-19.
5. Rosacea: chronic, inflammatory congestion of cheeks and nose (refer to textbook Figure 10-20.)
   a. Characterized by redness, blood vessel dilation, and formation of papules or pustules
   b. Cause is unknown; may be aggravated by spicy foods, alcohol, or extreme temperatures.
6. Seborrhea: due to over-activity and excessive secretion of the sebaceous glands (refer to textbook Figure 10-21.)
   a. May create itching and burning sensation
   b. Presence indicated by oily or shiny nose, forehead, or scalp or unusual amount of oil on the hair.
7. Steatoma: also known as wen; sebaceous cyst or fatty tumor filled with sebum (refer to textbook Figure 10-22.)
   a. Subcutaneous tumor of the sebaceous glands; ranges in size from a pea to an orange
   b. Usually occurs on the scalp, neck, and back

F. Disorders of the Sudoriferous (Sweat) Glands

1. Bromhidrosis: refers to foul-smelling perspiration; noticeable in armpits and on feet
2. Anhidrosis: lack of perspiration; may be result of fever or certain skin diseases; requires medical attention
3. Hyperhidrosis: excessive perspiration caused by excessive heat or general body weakness; requires medical treatment
4. Miliaria rubra: also known as prickly heat; acute inflammatory disorder of the sweat glands
   a. Small, red vesicle eruption accompanied by burning/itching of the skin
   b. Caused by exposure to excessive heat
4. Skin Cancer

A. Introduction
1. Three types of skin cancer caused from overexposure to the sun.
2. Type name is determined by type of body cells affected.
3. Refer to textbook Figures 10-23 to 10-25.

B. Types of Skin Cancer
1. Basal cell carcinoma: most common type and least severe; characterized by light or pearly nodules
2. Squamous cell carcinoma: more serious than basal cell type; characterized by scaly red papules or nodules
3. Malignant melanoma: most serious and least common form; characterized by dark brown or black patches

C. Detection
1. If detected early, there is a good chance for survival.
2. Barbers should not attempt to diagnosis skin disorders.
3. Barbers should be aware of changes in their clients’ skin.
4. Barbers may suggest that a client seeks the advice of a dermatologist or physician.
5. ABCDE checklist: notice changes in skin lesions or hypertrophies.
   a. Asymmetry
   b. Border
   c. Color
   d. Diameter
   e. Evolution
   Note: A physician should examine any of these changes.

5. Maintaining Healthy Skin

A. Diet
1. Major factor in maintaining skin’s health and appearance
2. Proper/beneficial diets help to regulate hydration, oil production, and cell function.
3. Foods: a well-balanced diet of fats, carbohydrates, and proteins
4. Vitamins and supplements: aids in healing, softening, and fighting diseases of the skin
   a. Vitamin A: supports the overall health of the skin
   b. Vitamin C: important to skin and tissue repair
   c. Vitamin D: promotes healthy and rapid healing of the skin
   d. Vitamin E: helps to fight against harmful effects of the sun’s rays

B. Water
1. Sustains cell health, aids in toxin and waste elimination
2. Helps regulate body temperature and aids in proper digestion

Activity 2: 3-D model. Have students form four groups. Assign one of the following topics to each student group: histology of the skin, disorders of the skin, inflammations of the skin, and disorders of the sebaceous and sudoriferous glands. Use the following guidelines to implement this project:

1. Objective: To create a 3-D model of the topic and to present it to the class group as a review for the chapter test.
2. Criteria: Models should include representations and identification of topic specifics found in the chapter, e.g., disorders of the sweat glands: blackheads, milia, steatomas, etc.
3. Materials: Models may be constructed of a variety of materials, including food items or candy, but must be three-dimensional. Students should not have to purchase materials but use items found at home or in the school, e.g., an old mannequin or Styrofoam head form may be
used in combination with modeling clay, wax products, etc., to depict certain disorders of the sweat glands. Instructors should provide common items such as paints, marking pens, scissors, etc., for crafting the model.

4. Time requirements: Students should be provided with class time to work on their projects. Allow 15 to 20 minutes for initial planning time, up to two hours of construction time, and a final 15 to 20 minutes for presentation rehearsal.

5. Presentation: Each student in the group should participate in some portion of the presentation delivery.

6. During the presentations, the instructor may need to correct information presented or add key points that students omit from their review of the topic.

SUMMARY/REVIEW: What did we learn and do today?

1. Described the structure, divisions, layers, and appendages of the skin.
2. Reviewed different nerve fibers of the skin.
3. Discussed the functions of the skin.
4. Defined and described sebaceous and sudoriferous glands.
5. Identified and described primary and secondary lesions of the skin.
6. Discussed skin disorders, inflammations, pigmentations, and hypertrophies of the skin.
7. Identified different types and characteristics of skin cancer; reviewed the ABCD checklist.
8. Discussed methods for maintaining healthy skin.
9. Formed groups to discuss and design a 3-D model project (optional).
10. Distributed Key Terms Study Guide—Histology of the Skin (optional).

THEORY REVIEW QUESTIONS AND ANSWERS

1. What does healthy skin look like?
   Answer: Slightly moist, soft, elastic, and flexible, with a smooth, fine-grained texture

2. What are the two main divisions of the skin?
   Answer: Epidermis and dermis

3. What is the epidermis also called?
   Answer: Cuticle or scarf skin

4. What are the layers of the epidermis?
   Answer: Stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, and stratum germinativum

5. What is the dermis also called?
   Answer: Derma, corium, cutis, or true skin

6. Name the two layers of the dermis.
   Answer: Papillary and reticular

7. Which layer of the dermis contains cone-shaped projections of elastic tissue called papillae?
   Answer: The papillary layer

8. What structures does the reticular layer contain?
   Answer: Fat cells, sweat glands, blood vessels, hair follicles, lymph glands, arrector pili muscles, and oil glands

9. What is another name for subcutaneous tissue?
   Answer: Adipose tissue

10. What structures are considered appendages of the skin?
    Answer: Hair, nails, sweat glands, and oil glands

11. How is the skin nourished?
    Answer: Through the blood and lymph supply
12. What are the three types of nerve fibers found in the skin?
   **Answer:** Motor, sensory, and secretory nerve fibers

13. What determines the color of the skin?
   **Answer:** Blood supply, melanin, and heredity

14. What are the two types of glands found in the skin?
   **Answer:** Sudoriferous or sweat glands and sebaceous or oil glands

15. What is the function of sweat glands?
   **Answer:** To regulate body temperature and help to eliminate waste products from the body

16. What substance does the sebaceous gland secrete, and what does it do?
   **Answer:** Sebum; lubricates the skin and preserves the softness of the hair

17. What are six important functions of the skin?
   **Answer:** Sensation, heat regulation, absorption, protection, excretion, and secretion

18. What is a lesion?
   **Answer:** A structural change in the tissues caused by injury or disease

19. What are the primary lesions of the skin?
   **Answer:** Bulla, cyst, macule, papule, pustule, tubercle, tumor, vesicle, and wheal

20. What are the secondary lesions of the skin?
   **Answer:** Crust, excoriation, fissure, keloid, scale, scar, and ulcer

21. What does eczema look like?
   **Answer:** Dry or moist lesions with itching or burning

22. What type of infection causes herpes simplex?
   **Answer:** A recurring viral infection

23. What does psoriasis look like?
   **Answer:** Dry red patches covered with coarse, silvery scales on the scalp, elbows, knees, chest, or lower back

24. What causes dermatitis venenata?
   **Answer:** Contact with chemicals or tints

25. List the disorders of the sebaceous glands.
   **Answer:** Comedone, milia, steatoma, acne, rosacea, stasis, and seborrhea

26. What does seborrhea look like?
   **Answer:** An oily or shiny nose, forehead, or scalp

27. List the disorders of the sudoriferous glands.
   **Answer:** Bromhidrosis, anhidrosis, hyperhidrosis, and miliaria rubra

28. What are three ways to maintain healthy skin?
   **Answer:** Eat a well-balanced diet, take vitamins and supplements, and drink plenty of water

**ASSIGNMENTS**

1. Bring materials and supplies for 3-D model project to class.
2. Study material for 3-D model presentation.
3. Read Chapter 11: Properties and Disorders of the Hair and Scalp.
4. Begin Workbook Chapter 11: Properties and Disorders of the Hair and Scalp; due date: ______.
Textbook Chapter Review Questions and Answers

Chapter 10: Properties and Disorders of the Skin

1. Briefly describe healthy skin.
   
   Healthy skin is slightly moist, soft, elastic, and flexible, with a smooth, fine-grained texture.

2. Name the two main divisions of the skin and describe the layers within each division.
   
   The epidermis is the outermost protective layer of the skin. It is the thinnest layer of the skin and is also known as the cuticle or scarf skin. The epidermis contains no blood vessels, but has many small nerve endings. The layers of the epidermis are as follows:
   
   a) The stratum corneum, or horny layer, is the outer layer of the epidermis, consisting of scale-like cells that are continually shed and replaced by cells coming to the surface from the underlying layers. These cells are made up of a protein called keratin, which combines with a thin layer of oil to help make the stratum corneum a protective, waterproof layer.
   
   b) The stratum lucidum, or clear layer, lies beneath the stratum corneum and consists of small, transparent cells through which light can pass.
   
   c) The stratum granulosum, or granular layer, consists of cells that look like distinct granules. The cells are almost dead and are pushed to the surface to replace cells that are shed from the stratum corneum.
   
   d) The stratum spinosum, or spiny layer, often classified as part of the germinativum, is a sublayer that lies above the basal strata and beneath the stratum granulosum. It is in the spiny layer that the beginning of the process that causes skin cells to shed begins.
   
   e) The stratum germinativum, also known as the Malpighian or basal layer, is the deepest layer of the epidermis. It is the reproductive layer, responsible for the growth of the epidermis. It contains a dark pigment called melanin, which protects the sensitive cells below from the destructive effects of excessive exposure to ultraviolet rays.

   The dermis is the inner layer of the skin. It is also called the derma, corium, cutis, or true skin. It is about 25 times thicker than the epidermis and consists of connective tissue. Its structure has blood vessels, nerves, lymph and oil glands, hair follicles, arrector pili muscles, and papillae. The dermis consists of two layers: the papillary or superficial layer and the reticular or deeper layer.
   
   a) The papillary layer lies directly beneath the epidermis. It contains small, cone-shaped projections of elastic tissue called papillae that point upward into the epidermis. Tactile corpuscles with nerve fiber endings are sensitive to touch and pressure. This layer also contains some melanin.
   
   b) The reticular layer is the deeper layer of the dermis. It supplies the skin with oxygen and nutrients and contains fat cells, sweat glands, blood vessels, hair follicles, lymph glands, arrector pili muscles, and oil glands.
   
   c) Sometimes subcutaneous tissue, also known as adipose tissue, is considered part of the dermis. It is a layer of fatty tissue found below the dermis.

3. Identify the appendages of the skin.
   
   The appendages of the skin are hair, nails, sweat glands, and oil glands.

4. How is the skin nourished?
   
   Blood and lymph supply nourishment to the skin.

5. Name three types of nerve fibers found in the skin.
   
   Motor, sensory, and secretory

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6. What determines the color of the skin?
   Blood supply, melanin, and heredity

7. Identify two types of glands found in the skin and describe their functions.
   Sudoriferous, or sweat, glands regulate body temperature and help to eliminate waste products from the body. Sebaceous, or oil, glands connect to the hair follicle and secrete sebum, which lubricates the skin and preserves the softness of the hair.

8. List the six important functions of the skin.
   Sensation, heat regulation, absorption, protection, excretion, and secretion

9. What is a lesion?
   A lesion is a structural change in the tissues caused by injury or disease.

10. What are the characteristics of primary skin lesions?
    Primary lesions are characterized by flat, non-palpable changes in skin color (e.g., macule); elevations formed by fluid in a cavity (e.g., pustules); or by elevated, palpable solid masses (e.g., papule).

11. Describe the characteristics of secondary skin lesions.
    Secondary lesions are characterized by a collection of material on the skin (e.g., scale, crust, or keloid); or by a loss of skin surface (e.g., ulcer or fissure).

12. List the characteristics of the following: eczema, herpes simplex, psoriasis, and dermatitis venenata.
    Eczema is an inflammatory skin disease that may be acute or chronic. It is present as dry or moist lesions, accompanied by itching or burning, and should be referred to a physician for treatment. The cause is unknown.
    Herpes simplex is a recurring viral infection that produces fever blisters or cold sores on the lips, nostrils, or other parts of the face, and rarely lasts more than a week. It is contagious.
    Psoriasis is a chronic, inflammatory skin disease, characterized by dry red patches covered with coarse, silvery scales; it usually occurs on the scalp, elbows, knees, chest, or lower back. It is not contagious and the cause is unknown.
    Dermatitis venenata is an eruptive skin infection resulting from occasional or frequent contact with chemicals or tints. It is an occupational disorder.

13. What are some characteristics of seborrhea that might make it easier to distinguish from acne?
    Excessive oiliness over the face or scalp; may have an itching or burning sensation.

14. Which two disorders of the sudoriferous glands requires medical attention?
    Anhidrosis (lack of perspiration) and hyperhidrosis (excessive perspiration)

15. What is the most common and least severe type of skin cancer?
    Basal cell carcinoma
Test—Chapter 10

PROPERTIES AND DISORDERS OF THE SKIN

Read each statement carefully. Circle the letter that correctly completes each of the following statements.

1. The skin covering the body is:
   a) inelastic           c) elastic and flexible
   b) inflexible          d) very tight

2. Healthy skin should be free of blemishes and:
   a) perfectly dry       c) slightly moist
   b) slightly alkaline    d) bluish in color

3. The skin is thinnest on the:
   a) eyebrows            c) forehead
   b) eyelids              d) back of the hand

4. The skin is thickest on the:
   a) palms               c) forehead
   b) cheeks               d) chin

5. The appendages of the skin are hair, nails, and:
   a) oil glands          c) neither a nor b
   b) sweat glands        d) a and b

6. The two main divisions of the skin are the epidermis and the:
   a) medulla             c) cuticle
   b) dermis              d) scarf skin

7. The outer protective layer of the skin is called the scarf skin or the:
   a) dermis               c) epidermis
   b) adipose tissue       d) subcutaneous tissue

8. Another name for the epidermis is:
   a) corium              c) cuticle
   b) true skin           d) derma

9. No blood vessels are found in the:
   a) dermis               c) subcutis
   b) cutis                d) epidermis

10. Blood vessels are found in the:
    a) epidermis            c) cuticle layer
    b) dermis               d) scarf skin

11. The color of the skin is due to the amount of blood it contains and:
    a) keratin              c) fat
    b) moisture             d) melanin
12. The layer of the epidermis that is continually being shed and replaced is the:
   a) stratum lucidum  c) stratum granulosum
   b) stratum corneum  d) stratum mucosum

13. The stratum corneum is also known as the:
   a) clear layer  c) granular layer
   b) horny layer  d) basal layer

14. The epidermis contains:
   a) blood vessels  c) adipose tissue
   b) small nerve endings  d) subcutaneous tissue

15. Keratin in the epidermis is found in the:
   a) stratum mucosum  c) stratum lucidum
   b) stratum corneum  d) stratum granulosum

16. The stratum lucidum is also known as the:
   a) horny layer  c) clear layer
   b) grainy layer  d) reproductive layer

17. The stratum granulosum is also known as the:
   a) grainy layer  c) clear layer
   b) horny layer  d) reproductive layer

18. The stratum germinativum is the innermost layer of the:
   a) dermis  c) subcutaneous
   b) epidermis  d) corium

19. The growth of the epidermis starts in the:
   a) stratum lucidum  c) stratum corneum
   b) stratum germinativum  d) stratum granulosum

20. The dermis is also known as the corium, cutis, derma, and:
   a) cuticle  c) true skin
   b) false skin  d) fatty tissue

21. The reticular and papillary layers are found in the:
   a) epidermis  c) cuticle
   b) dermis  d) adipose tissue

22. The papillary layer of the dermis contains looped capillaries and:
   a) adipose tissue  c) subcutaneous tissue
   b) soft tissue  d) nerve endings

23. The reticular layer is the inner portion of the:
   a) epidermis  c) cuticle
   b) dermis  d) subcutis
24. Arrector pili muscles are found in the:
   a) papillary layer          c) stratum corneum
   b) stratum germinativum    d) reticular layer
25. Subcutaneous tissue consists mainly of:
   a) muscle tissue          c) keratin
   b) fatty tissue            d) pigment
26. Subcutaneous tissue is also known as:
   a) muscle tissue          c) adipose tissue
   b) soft tissue             d) hard tissue
27. The skin is nourished through the:
   a) blood supply          c) lymph supply
   b) blood and lymph supply  d) platelet supply
28. Motor nerve fibers are distributed to the:
   a) arrector pili muscles c) adipose tissue
   b) fatty tissue          d) fat muscles
29. Sensory nerve fibers react to:
   a) hair follicles       c) skin pigment
   b) freckles              d) touch
30. Secretory nerve fibers are distributed to the:
   a) sweat glands           c) neither a nor b
   b) oil glands            d) a and b
31. Collagen and elastin are:
   a) sensory fibers       c) protein fibers
   b) secretory fibers     d) motor fibers
32. Melanin, a skin pigment, is found in the stratum germinativum and:
   a) stratum corneum       c) papillary layer
   b) adipose tissue        d) reticular layer
33. Melanin protects the skin from the harmful action of excessive:
   a) bacteria           c) ultraviolet rays
   b) pressure            d) electrical current
34. The sebaceous glands are duct glands that secrete:
   a) melanin          c) sebum
   b) saliva           d) perspiration
35. The function of sebum is to keep the skin:
   a) clean          c) dry
   b) lubricated    d) hard
36. The duct of an oil gland empties into a:
   a) blood vessel c) sweat pore
   b) hair follicle d) hair papilla

37. No oil glands are found on the:
   a) palms c) forehead
   b) face d) scalp

38. Sweat glands are duct glands that excrete:
   a) sebum c) melanin
   b) perspiration d) oxygen

39. Sweat glands help to regulate body temperature and eliminate this from the body:
   a) oxygen c) sebum
   b) waste products d) a and c

40. The small openings of the sweat glands on the skin are called:
   a) follicles c) pores
   b) capillaries d) papillae

41. The excretion of perspiration from the skin is under the control of the:
   a) muscular system c) respiratory system
   b) nervous system d) circulatory system

42. Certain chemical preparations that may be absorbed into the skin include:
   a) antiseptic creams c) ointments
   b) hormone creams d) a, b, and c

43. The principal functions of the skin are protection, sensation, heat regulation, and:
   a) excretion c) secretion
   b) absorption d) a, b, and c

44. Signs or indications of disease are known as:
   a) indicators c) blemishes
   b) symptoms d) contraindications

45. Clients with an unrecognizable skin or scalp condition should be:
   a) referred to a physician c) given a treatment
   b) referred to a pharmacist d) given only a haircut

46. A structural change in the tissues caused by injury or disease is known as a:
   a) tumor c) cyst
   b) lesion d) fissure

47. Itching is an example of a/an:
   a) subjective symptom c) voluntary symptom
   b) objective symptom d) imaginary symptom
48. An objective symptom might look like a:
   a) pimple  c) pustule
   b) boil      d) a, b, or c

49. Flat, non-palpable changes in skin color, such as a macule, are characteristic of a:
   a) primary lesion  c) tertiary lesion
   b) secondary lesion d) neither a, b, nor c

50. Elevations formed by fluid in a cavity, such as a pustule, are characteristic of a:
   a) primary lesion  c) tertiary lesion
   b) secondary lesion d) a, b, or c

51. Elevated, palpable solid masses, such as a papule, are characteristic of a:
   a) primary lesion  c) tertiary lesion
   b) secondary lesion d) neither a, b, nor c

52. Examples of primary lesions include the following except:
   a) bulla, cyst, macule  c) papule, pustule, tubercle
   b) vesicle, wheal      d) scar, fissure, keloid

53. An inflamed pimple containing pus is called a:
   a) vesicle  c) macule
   b) pustule      d) tubercle

54. Poison ivy and poison oak produce:
   a) bullas  c) vesicles
   b) papules      d) tubercles

55. The word that best describes a vesicle is:
   a) scar  c) blister
   b) abrasion      d) scab

56. Lesions that appear as collected material on the skin or loss of skin surface are:
   a) primary lesions  c) tertiary lesions
   b) secondary lesions d) a, b, or c

57. Examples of secondary lesions include the following except:
   a) bulla, cyst, macule  c) excoriation, crust
   b) scale, scab      d) scar, fissure, keloid

58. A thick scar resulting from excessive growth of fibrous tissue is called a:
   a) scab  c) keloid
   b) excoriation      d) crust

59. The skin lesion found on chapped lips and hands is a:
   a) fissure  c) stain
   b) papule      d) tumor
60. An abnormal growth of skin tissue that is usually benign or harmless is called a/an:
   a) tumor   c) hypertrophy
   b) cyst   d) excoriation

61. The common term for keratoma is:
   a) callous   c) tumor
   b) wart   d) birthmark

62. Medical attention is needed if a mole:
   a) grows in size or darkens   c) a and b
   b) becomes sore or scaly   d) neither a nor b

63. A skin wart is known as a:
   a) keloid   c) verruca
   b) keratoma   d) nevus

64. Which of the following is not related to skin pigmentation?
   a) lentigines   c) tan
   b) hypertrophy   d) nevus

65. Liver spots on the skin are known as:
   a) nevi   c) chloasma
   b) leukoderma   d) albinism

66. A birthmark on the skin is known as:
   a) albinism   c) leukoderma
   b) a nevus   d) chloasma

67. Abnormal white patches present on the skin are called:
   a) chloasma   c) leukoderma
   b) albinism   d) nevi

68. The common term for lentigines is:
   a) birthmarks   c) white patches
   b) freckles   d) superfluous hair

69. The general term for an inflammatory condition of the skin is:
   a) trichology   c) histology
   b) dermatology   d) dermatitis

70. An inflammatory skin disease that may be acute or chronic with dry or moist lesions is:
   a) eczema   c) psoriasis
   b) seborrhea   d) herpes simplex

71. A chronic, inflammatory skin disease with dry red patches and coarse silvery scales is:
   a) eczema   c) psoriasis
   b) herpes simplex   d) dermatitis venenata
72. An eruptive skin infection resulting from contact with chemicals or tints is:
   a) eczema  c) psoriasis
   b) seborrhea d) dermatitis venenata

73. A recurring viral infection that produces fever blisters or cold sores is:
   a) eczema  c) psoriasis
   b) herpes simplex d) dermatitis venenata

74. An open comedone is a:
   a) whitehead  c) blackhead
   b) pimple d) dry skin

75. Closed comedones are commonly known as:
   a) whiteheads  c) pimples
   b) blackheads d) dry skin

76. Acne is a disorder of the:
   a) sweat glands  c) intestinal glands
   b) oil glands d) stomach glands

77. A sebaceous cyst or fatty tumor that is filled with sebum is called a/an:
   a) steatoma  c) tumor
   b) ulcer d) pustule

78. Chronic, inflammatory congestion of the cheeks and nose is called:
   a) seborrhea  c) sunburn
   b) miliaria rubra d) rosacea

79. Over-activity and excessive secretion of the sebaceous glands may develop into:
   a) seborrhea  c) sunburn
   b) dermatitis venenata d) rosacea

80. One of the symptoms of xerosis is:
   a) oily skin  c) dry skin
   b) clammy skin d) warm skin

81. Bromhidrosis means:
   a) lack of perspiration  c) excessive perspiration
   b) foul-smelling perspiration d) discolored perspiration

82. Excessive perspiration is typical of:
   a) anhidrosis  c) hyperhidrosis
   b) osmidrosis d) bromhidrosis

83. Anhidrosis means:
   a) lack of perspiration  c) foul-smelling perspiration
   b) excessive perspiration d) prickly heat
84. Prickly heat is the common term for:
   a) malaria fever    c) ivy dermatitis
   b) miliaria rubra    d) anhidrosis

85. The most common and least severe type of skin cancer is:
   a) squamous cell carcinoma c) basal cell carcinoma
   b) malignant melanoma     d) melanoma

86. A form of skin cancer that is characterized by scaly red papules or nodules is:
   a) squamous cell carcinoma c) basal cell carcinoma
   b) malignant melanoma     d) melanoma

87. The most serious form of skin cancer, characterized by dark patches on the skin, is:
   a) squamous cell carcinoma c) basal cell carcinoma
   b) malignant melanoma     d) melanoma

88. The major factor involved in maintaining the skin's overall health and appearance is:
   a) heredity    c) diet
   b) climate     d) age

89. The vitamin that is important to skin and tissue repair is:
   a) vitamin A    c) vitamin D
   b) vitamin C    d) vitamin E

90. The vitamin that supports the overall health of the skin is:
   a) vitamin A    c) vitamin D
   b) vitamin C    d) vitamin E
# Answer Key—Chapter 10

## Properties and Disorders of the Skin

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Supplement 10.0

LABEL THE DIVISIONS AND APPENDAGES OF THE SKIN
Supplement 10.1

ANSWER KEY FOR DIVISIONS AND APPENDAGES OF THE SKIN

Hair
Epidermis
Sebaceous (oil) glands
Veins
Arteries

Sweat pore
Epidermis

Sweat duct
Fundus

212

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### Supplement 10.2

**KEY TERMS STUDY GUIDE—HISTOLOGY OF THE SKIN**

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<td><strong>ACNE</strong></td>
<td>Skin disorder characterized by chronic inflammation of the sebaceous glands from retained secretions</td>
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<tr>
<td><strong>ALBINISM</strong></td>
<td>Congenital leukodermatosis or absence of melanin pigment of the body, including the skin, hair, and eyes</td>
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<tr>
<td><strong>ANHIDROSIS</strong></td>
<td>Deficiency in perspiration, often result of fever or certain skin diseases</td>
</tr>
<tr>
<td><strong>ASTEATOSIS</strong></td>
<td>Condition of dry, scaly skin due to deficiency or absence of sebum; caused by old age and by exposure to cold</td>
</tr>
<tr>
<td><strong>BASAL CELL CARCINOMA</strong></td>
<td>Most common and least severe type of skin cancer; often characterized by light or pearly nodules</td>
</tr>
<tr>
<td><strong>BROMHIDROSIS</strong></td>
<td>Foul-smelling perspiration, usually noticeable in the armpits or on the feet</td>
</tr>
<tr>
<td><strong>BULLA</strong></td>
<td>Large blister containing a watery fluid; similar to vesicle but larger</td>
</tr>
<tr>
<td><strong>CHLOASMA</strong></td>
<td>Condition characterized by increased pigmentation on the skin, in spots that are not elevated</td>
</tr>
<tr>
<td><strong>COLLAGEN</strong></td>
<td>Fibrous protein that gives the skin form and strength</td>
</tr>
<tr>
<td><strong>COMEDONES</strong></td>
<td>Blackheads</td>
</tr>
<tr>
<td><strong>CRUST</strong></td>
<td>Dead cells that form over a wound or blemish while it is healing; an accumulation of sebum and pus, sometimes mixed with epidermal material</td>
</tr>
<tr>
<td><strong>CUTICLE OR SCARF SKIN</strong></td>
<td>The epidermis</td>
</tr>
<tr>
<td><strong>CYST</strong></td>
<td>Abnormal sac containing fluid above and below the skin</td>
</tr>
<tr>
<td><strong>DERMA, CORIUM, CUTIS, TRUE SKIN</strong></td>
<td>Other names for dermis</td>
</tr>
<tr>
<td><strong>DERMATITIS</strong></td>
<td>Inflammatory condition of the skin</td>
</tr>
<tr>
<td><strong>DERMATITIS VENENATA</strong></td>
<td>An eruptive skin infection caused by contact with irritating substances such as chemical or tints</td>
</tr>
<tr>
<td><strong>DERMATOLOGIST</strong></td>
<td>A medical skin specialist</td>
</tr>
<tr>
<td><strong>DERMATOLOGY</strong></td>
<td>Study of skin, its nature, structure, functions, diseases, and treatment</td>
</tr>
<tr>
<td><strong>DERMIS</strong></td>
<td>Underlying, or inner layer of skin</td>
</tr>
<tr>
<td><strong>ECZEMA</strong></td>
<td>Inflammatory, painful itching disease of the skin, acute or chronic in nature, presenting many forms of dry or moist lesions</td>
</tr>
<tr>
<td><strong>ELASTIN</strong></td>
<td>Protein base similar to collagen that forms elastic tissue</td>
</tr>
<tr>
<td><strong>EPIDERMIS</strong></td>
<td>The outermost layer of the skin</td>
</tr>
<tr>
<td><strong>ESTHETICIAN</strong></td>
<td>Specialist in cleansing, preservation of health, and beautification of the skin and body</td>
</tr>
<tr>
<td><strong>EXCORIATION</strong></td>
<td>Skin sore or abrasion produced by scratching or scraping</td>
</tr>
<tr>
<td><strong>FISSURE</strong></td>
<td>Crack in the skin that penetrates the dermis, such as chapped hands or lips</td>
</tr>
<tr>
<td><strong>FUNDUS</strong></td>
<td>Coiled base of sudoriferous (sweat) gland</td>
</tr>
<tr>
<td><strong>HEAT REGULATION, SECRETION, ABSORPTION, PROTECTION, SENSATION, EXCRETION</strong></td>
<td>The six functions of the skin</td>
</tr>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>HERPES SIMPLEX</td>
<td>Fever blister or cold sore</td>
</tr>
<tr>
<td>HYPERHIDROSIS</td>
<td>Excessive sweating, caused by heat or general body weakness</td>
</tr>
<tr>
<td>HYPERTROPHY</td>
<td>Abnormal growth of the skin</td>
</tr>
<tr>
<td>KELOID</td>
<td>Thick scar resulting from excessive growth of fibrous tissue</td>
</tr>
<tr>
<td>KERATOMA</td>
<td>Acquired, superficial, thickened patch of the epidermis commonly known as callus, caused by pressure or friction on hands and feet</td>
</tr>
<tr>
<td>LENTIGINES</td>
<td>Freckles</td>
</tr>
<tr>
<td>LEUKODERMA</td>
<td>Skin disorder characterized by light abnormal patches; caused by burn or congenital disease that destroys the pigment-producing cells</td>
</tr>
<tr>
<td>MACULA</td>
<td>Small, discolored patch; freckle</td>
</tr>
<tr>
<td>MALIGNANT MELANOMA</td>
<td>Most serious form of skin cancer; often characterized by black or dark brown patches on the skin that may appear uneven in texture, jagged, or raised</td>
</tr>
<tr>
<td>MELANIN</td>
<td>Tiny grains of pigment deposited in the stratum germinativum of the epidermis and the papillary layers of the dermis</td>
</tr>
<tr>
<td>MILIA</td>
<td>Whiteheads</td>
</tr>
<tr>
<td>MILIARIA RUBRA</td>
<td>Prickly heat; acute inflammatory disorder of the sweat glands</td>
</tr>
<tr>
<td>MOLE</td>
<td>Small, brownish spot or blemish on the skin</td>
</tr>
<tr>
<td>NEVUS</td>
<td>Small or large malformation of the skin due to abnormal pigmentation or dilated capillaries</td>
</tr>
<tr>
<td>PAPILLARY LAYER</td>
<td>Lies directly beneath epidermis and contains small, cone-shaped projections of elastic tissue pointing upward</td>
</tr>
<tr>
<td>PAPULE</td>
<td>Pimple</td>
</tr>
<tr>
<td>PSORIASIS</td>
<td>Skin disease characterized by red patches; covered with white-silver scales usually found on scalp, elbows, knees, chest, and lower back</td>
</tr>
<tr>
<td>PUSTULE</td>
<td>An inflamed pimple containing pus</td>
</tr>
<tr>
<td>RETICULAR LAYER</td>
<td>This layer supplies skin with oxygen and nutrients</td>
</tr>
<tr>
<td>ROSACEA</td>
<td>Chronic congestion appearing primarily on the cheeks and nose, characterized by redness, dilation of the blood vessels, and the formation of papules and pustules</td>
</tr>
<tr>
<td>SCALE</td>
<td>Any thin plate of epidermal flakes, dry or oily, such as abnormal or excessive dandruff</td>
</tr>
<tr>
<td>SCAR</td>
<td>Light-colored, slightly raised mark on the skin formed after an injury or lesion</td>
</tr>
<tr>
<td>SEBACEOUS GLAND</td>
<td>Oil glands</td>
</tr>
<tr>
<td>SEBORRHEA</td>
<td>Skin condition caused by an abnormal increase of secretion from the sebaceous glands</td>
</tr>
<tr>
<td>SQUAMOUS CELL CARCINOMA</td>
<td>Type of skin cancer more serious than basal cell carcinoma; often characterized by scaly red papules or nodules</td>
</tr>
<tr>
<td>STAIN</td>
<td>Abnormal brown or wine-colored skin discoloration with circular and irregular shape</td>
</tr>
<tr>
<td>STEATOMA</td>
<td>Sebaceous cyst or fatty tumor</td>
</tr>
<tr>
<td>STRATUM LUCIDUM</td>
<td>Clear layer of epidermis consisting of transparent cells</td>
</tr>
<tr>
<td>STRATUM CORNEUM</td>
<td>Horny, outer layer of the epidermis</td>
</tr>
<tr>
<td>STRATUM GERMINATIVUM</td>
<td>Deepest layer of epidermis responsible for growth</td>
</tr>
</tbody>
</table>
### KEY TERMS STUDY GUIDE—HISTOLOGY OF THE SKIN

<table>
<thead>
<tr>
<th>SIDE ONE</th>
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<tr>
<td>STRATUS GRANULOSUM</td>
<td>Granular layer of epidermis</td>
</tr>
<tr>
<td>SUBCUTANEOUS LAYER</td>
<td>Fatty layer supplies skin with oxygen and nutrients</td>
</tr>
<tr>
<td>SUDORIFEROUS GLANDS</td>
<td>Sweat glands</td>
</tr>
<tr>
<td>TAN</td>
<td>Change in pigmentation of the skin caused by exposure to the sun or ultraviolet rays</td>
</tr>
<tr>
<td>THE SKIN</td>
<td>The largest organ of the body</td>
</tr>
<tr>
<td>TUBERCLE</td>
<td>Abnormal rounded, solid lump above, within or below the skin</td>
</tr>
<tr>
<td>TUMOR</td>
<td>Abnormal cell mass, varying in size, shape, and color</td>
</tr>
<tr>
<td>ULCER</td>
<td>Open lesion on the skin or mucous membrane of the body, accompanied by pus and loss of skin depth</td>
</tr>
<tr>
<td>VESICLE</td>
<td>Small blister or sac containing clear fluid</td>
</tr>
<tr>
<td>VITILIGO</td>
<td>Milky-white spots (leukoderma) of the skin; acquired condition</td>
</tr>
<tr>
<td>WHEAL</td>
<td>Itchy, swollen lesion that lasts only a few hours; caused by a blow, the bite of an insect, urticaria, or the sting of a nettle</td>
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</tbody>
</table>